Chapter 1. Introduction of Copy Smart 3
1.1 Overview 3
1.2 Feature and specifications 5

Chapter 2. Copy Smart hardware installation 7
2.1 Verify your package contents 7
2.2 Preparing for installation 8
2.2 Installtion of CD-R/RW dirve 9
2.2 Installation of CD-ROM dirve 12
2.3 Installation of Copy Smart Cabinet 15

Chapter 3. Copy Smart as a stand-alone CD Duper 18
3.1 Copy Smart control panel 18
3.2 Operation of control panel 19

Chapter 4. Copy Smart as hosted CD drives 22
4.1 Connect Copy Smart to host computer 22
4.2 Cofigruing Copy smart 22
4.3 Hardware requirement 22
4.4 Software requirement 22
4.5 Copy Smart DIP switch adjustment 23

Chapter 5. DupeBoy Utilities 24
5.1 About DupeBoy utilities 24
5.2 Installation of DupeBoy utilities 24
5.3 CD duplication with DupeBoy Disc Copier 28
5.4 Makes Audio CD with DupeBoy Audio Copier 32

Chapter 6. Copy Smart Monitor 37
6.1 Copy Smart Monitor utility 37

Appendix A. **CD drives fully supported by CopySmart 39**
Appendix B. **How to avoid failure on duplication 40**
Appendix C. **SCSIDE in brief 41**
Appendix D. **SCSIDE utility 42**
Appendix E. **Technical supports 45**
Appendix F. **How to enable LUN function on ACARD SCSI adapter 46**
Appendix G. **Benchmark of Copy Smart 47**

Chapter 1. Introduction of ARS2020 Copy Smart

1.1 Overview

PC/MAC users who want to backup their CD normally have go through many steps by turning on their computer, launching the software, setting up various parameters, and tiding up their computer sometimes up to one hour to get a CD backup. Obviously, a standalone CD-ROM duplicator will easily resolve the little inconvenience and drawback mentioned above.

There are some standalone SCSI type CD copier on the market, but for those PC user who already have an IDE CD-ROM drive and an IDE CD-R/RW drive, the only solution of having the standalone CD duplicator is buy a new set of SCSI CD-ROM drive and the CD-R/RW drive to assemble one.

ACARD Technology wants to help the PC users to protect their IDE investment(s) by introducing the first standalone IDE CD duplicator ***ARS2020 Copy Smart***, which allow the PC users putting their IDE CD-ROM drive and CD-R/RW drive into a smart standalone machine.

The ***ARS2020 Copy Smart*** have its own switching power supply (AC 110V~230V) which are special designed to provide the steady power which required by the laser burning operation of the CD-R/RW drive. Four simple pushbuttons panel is designed to provide copy modes selection and one button easy copy operation.

And ***ARS2020 Copy Smart*** have special designed, a very powerful

fan installed which can keep it cool to protect your CD drives.

ACARD technology further add more values to PC users by making the ***ARS2020 Copy Smart*** connectable to a PC host computer, this allow the PC users copy their valuable data from their PC to ***ARS2020 Copy Smart***. A bonus Ultra SCSI add-on adapter, an ARS2020 SCSI interface extension and two duplication software are provided by ACARD technology without additional cost. With the optional True-50 50X (or 56X) CD-ROM drive, the ***ARS2020 Copy Smart*** users now have a 50X-plus Ultra SCSI CD-ROM, this will make the ***ARS2020 Copy Smart*** users a world class 50X Ultra SCSI CD-ROM club member with just a minimum cost.

All this can be only possible by the ACARD continuous development of both IDE and SCSI RISC chip and the patented SCSIDE technology. The SCSIDE technology is a highly integrated System On Chip (SOC) design based on a RISC IDE, a RISC SCSI and high speed RISC CPU for two way SCSI-IDE command and data translation. The RISC CPU command set is further implemented by a flash ROM which provide the plug-and-play ATAPI drive function.

1.2 Feature & Specificaions

1. Dedicated power supply and powerful fan for high precision steady CD burning requirement.
2. Dimension:180mm(W)x165mm(H)x290mm(D)
3. Pushbutton for copy mode selection which including:
   -Test
   -Test & copy
   -Copy
   -Compare
   -Quick erase of CD-RW
4. Pushbutton for Write Speed selection which including:
   -Auto
   -6X/8X
   -4X
   -2X
   -1X
5. One pushbutton start
6. One pushbutton stop
7. Self diagnostics when power on
8. Progress light indication
9. Plug and Play ATAPI IDE CD-ROM support
10. Standalone IDE to IDE CD COPY controller
11. Standalone SCSI to Dual IDE command/data conversion controller
12. Build-in ACARD SCSIDE SOC (system on chip)
13. Standard Ultra-SCSI (20MB/sec) interface to host computer
14. Single SCSI ID selection with two SCSI LUN support
15. One PCI Ultra SCSI adapter for PC (or MAC)
16. Flash ROM for future drive support upgrade
17. CD format supported: All format
    -DATA CD

-Audio CD

-VCD, and other CD format

18. OS support:

-Win 95/98/2000

-Win NT

-Mac OS

-Linux

19. Software Bundle:

-DupeBoy Disc Copier

-DupeBoy Audio Copier

-Copy Smart Monitor

-SCSIDE utility

20. Optional: True-50 50X SCSI CD-ROM-Auto

Chapter 2. Copy Smart hardware installation

2.1 Verify your package content

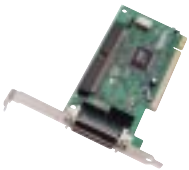
When you open the ARS2020 box, you should find the following items:

1. MALARS2020X010-0	***Operation manual (x1)***
2. AEC6710S2P22C00	***Ultra-SCSI PCI adapter (x1)***
3. CBL50HPM50HPMR-0	***50 pins Ultra-SCSI external cable (x1)***
4. CBL40X3X40C00F-0	***IDE internal cable (x2)***
5. CASARS20200000-0	***ARS2020 main system (x1)***
6. CDD5X74X6801X2	***CD Software (x1)***
7. STDCDRX50XI00I-0	***True-50 50X CD-ROM drive(optional)***
8. STDCDRWXXXI00I-0	***CD-R/RW drive (optional)***
9. POWCODXUS00000-0	***Power cord***

If your system come with the optional CD-ROM drive and CD-R/RW drive, all you have to do is connect the power cord to the ARS2020 and turn on the power on the back plane. And after the about 45 second self diagnostics, you are ready to go.

If your system come with the optional CD-ROM drive, you may have to install your own CD-R or CD-RW drive. Please follow the following procedure of installation.

ARS2020 main system (x 1)

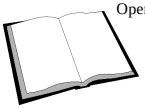


Ultra-SCSI PCI adapter (x 1)

Power cord (x 1)

CD software (x 1)

50-pin Ultra-SCSI external cable (x 1)



Operation manual (x 1)

IDE internal cable (x 2)

**** CD-ROM and CD-R/RW drives are optional***

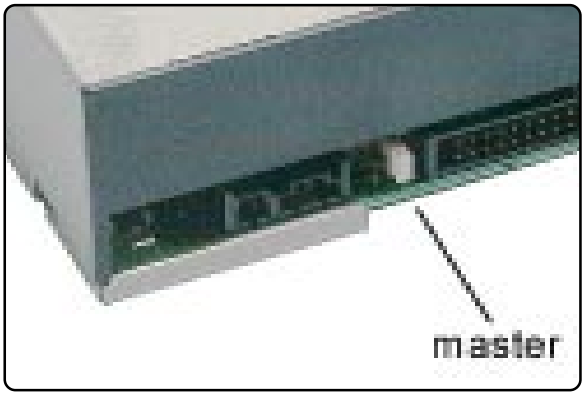
2.2 Preparing for installation

Step 1: Remove the back cover of Copy Smart.

Step 2: Remove the metal sleeve of Copy Smart.

2.3 Installation of CD-R/RW dirve

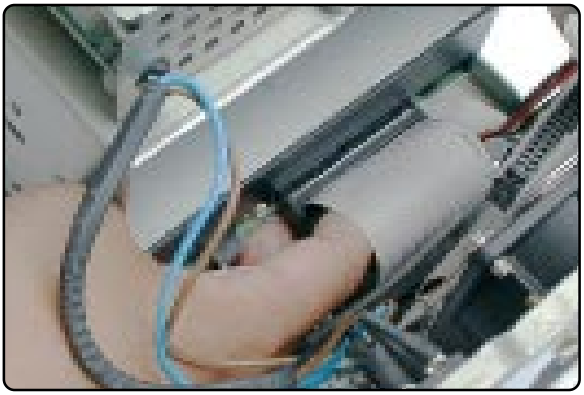
Step 1: Adjust your CD-R/RW drive to master drive. (Please refer to your CD-R/RW drive user's manual)



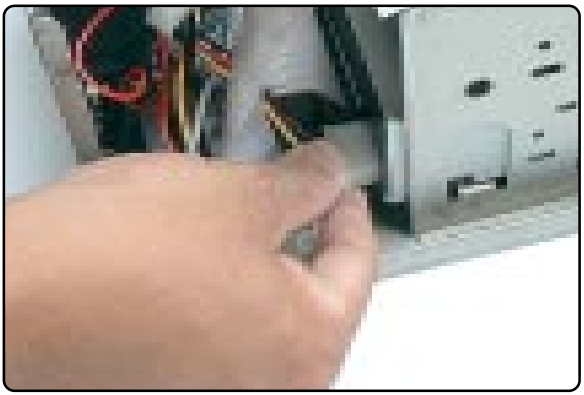
Step 2: Place your CD-R/RW drive into lower drive bay of Copy Smart.

(Please Note!! CD-R/RW drive must be installed to lower drive bay only!!)

Step 3: Connect IDE cable from Copy Smart controller board to 40-pin IDE interface connector of CD-R/RW drive.



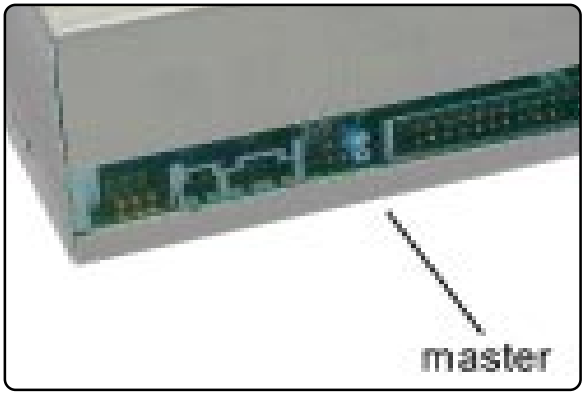
Step 4: Connect one of 4-pin DC power cords to the DC input connector of CD-R/RW drive.



Step 5: Screw up the device from sliding.

2.4 Installation of CD-ROM dirve

Step 1: Adjust your CD-ROM drive to master drive. (Please refer to your CD-ROM drive user's manual)



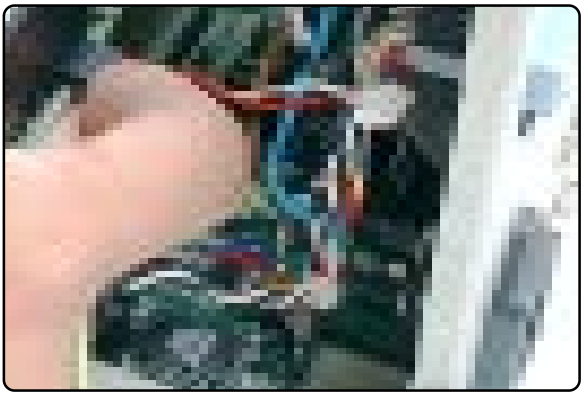
Step 2: Place your CD-ROM drive into upper device bay of Copy Smart.

(Please note: CD-ROM drive must be installed to upper drive bay only!!)

Step 3: Connect IDE cable from Copy Smart controller board to 40-pin IDE interface connector of CD-R/RW drive.

Step 4: Connect the other DC power cord to the CD-ROM drive DC input connector.

Step 5: Connect audio cable to CD-R/RW drive audio port.



Step 6: Screw up the device.

2.5. Installation of Copy Smart Cabinet

Step 1: Slide Copy Smart into sleeve.

Step 2: Screw up to fix sleeve.

Step 3: Place back cover onto backside of Copy Smart, and fix it.

Step 4: Done!

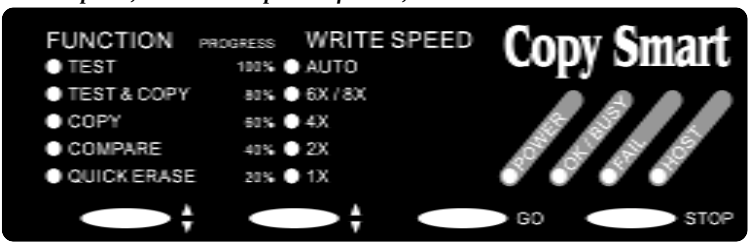
Step 5: Plug power cord into power connector of backside. ***(Copy Smart is designed for AC 110V~230V of Power Supply)***

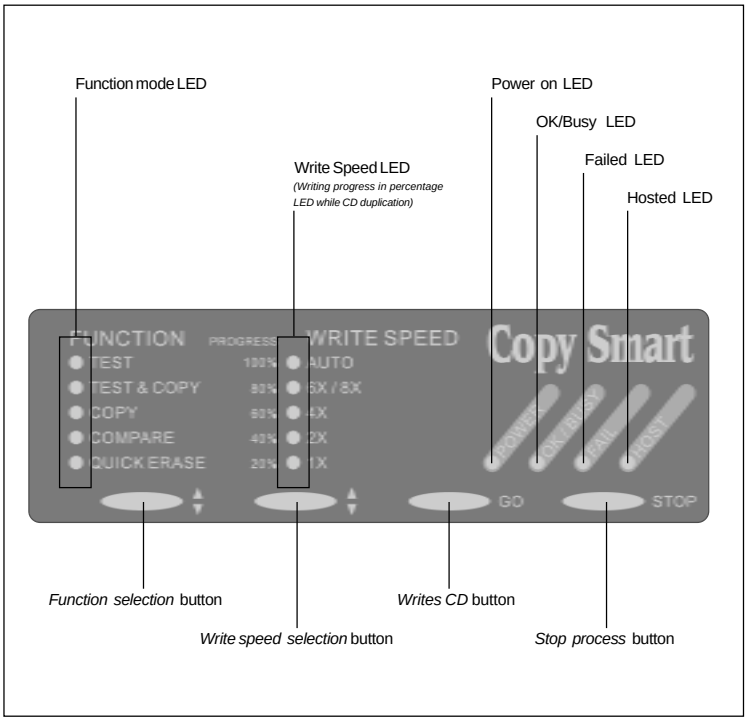
Chapter 3. Copy Smart as a stand-alone CD Duper

3.1 Copy Smart control panel

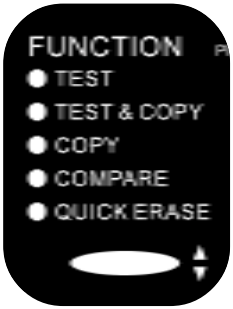
While Copy Smart works a stand-alone CD-Duper, its control panel is especially user-friendly for CD duplication. With this control panel, you can make your works more easily and increase productivites.

Control panel, and its descriptions of LEDs, and buttons.





3.2 Operation of control panel



FUNCTION selection:

Press Function selection button to choose function mode, and LED lighted up to indicate which has selected. Here are all of function mode description below:

TEST - Emulates CD duplication only.

TEST & COPY - Emulates CD duplication first. when it done, copy CD automatically.

COPY - Duplicate CD disc.

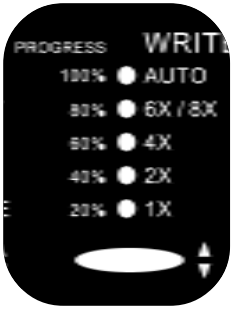
COMPARE - Compare source CD with destination one.

QUICK ERASE - Erase CD-RW disk contents. This function is only for CD-RW diskettes and for CD-RW drives.

WRITE SPEED selection:

Press Write speed selection button to choose one of writing speeds, and LED lighted up to indicate which has selected. (It just depends on the ability of CD-R/RW drive which has mounted in Copy Smart and CD-R/RW disk which you use, if writing speed that user selected is over mounted drive or disc ability, Copy Smart may indicate lower speed in accordance with the speed limit of CD-R/RW drive.

While AUTO mode has choosen, Copy Smart will select optimized speed for writing.



WRITING PROGRESS INDICATION:

The same row with writing speed LED lights, those also indicated writing job progress while Copy Smart duplicating CD.

This row of LED lights are as indicators for CD duplication progress in percentage. User could know how much progress has done.

GO button

Press "**GO**" button to start the process you selected. To avoid the mis-touch, user should press this button for at least 0.5 sec to work.

STOP button

Press "**STOP**" button to cancel processing job. To avoid mis-touch, user should press this button for at least one sec. to work. (Please note, this button becomes invalid while Copy Smart works on ***"QUICK ERASE"*** mode.)

Other LED lights indication:

POWER - Power is on when LED lighted up.

OK/BUSY - Process is completed when LED lighted up. While LED blink light indicates that Copy Smart is on working.

FAIL - LED lighted up indicates that duplication process is failed.

HOST - LED lighted up indicates that Copy Smart is controlled by host computer.

Chapter 4. Copy Smart as hosted CD drives

4.1 Connect Copy Smart to host computer

Step 1: Please make sure your computer has SCSI host adapter installed, and that SCSI host adapter should be LUN enable. (*Please refer the user manual of SCSI host adapter. If you use ACARD's SCSI adapter, you could refer to Appendix F.*)

Step 2: Connect Copy Smart to SCSI host adapter with external SCSI cable.

Note: ARS2020 Copy Smart is use just one SCSI ID only, and provides two CD drives for host computer, please check LUN function enable on your system.

Adjust SCSI ID

4.2 Cofigruing Copy smart

Step 1: Setting up SCSI ID. DO NOT use the same SCSI ID with other SCSI devices which are on same SCSI bus.

Step 2: Setting up SCSI termination On/Off.
If Copy Smart is the last device on SCSI bus, user should set SCSI termination ON, Or should be OFF.

4.3 Hardware requirement

CPU: Pentium-100 / ***RAM***: 32MB

H.D.D.: 75MB free space on hard drive.

Interface: Ultra SCSI host adapter installed

4.4 Software requirement

O.S.: Windows 95/98/2000, or Windows NT4

Utilities: DupeBoy utilities, it includes "DupeBoy Disc Copier" and "DupeBoy Audio Copier". And SCSIDE utilities, it can configures/updates Copy Smart.

Optional Utilities: Adaptec EZ-CD creator, Direct-CD which are fully compliant for Copy Smart.

4.5 Copy Smart DIP switch adjustment

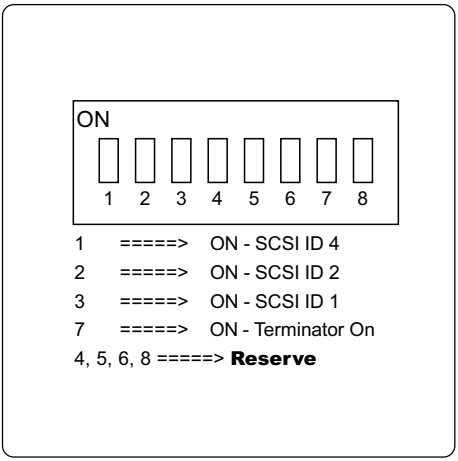
switch 1: turn on is for SCSI ID 4

switch 2: turn on is for SCSI ID 2

switch 3: turn on is for SCSI ID 1

switch 7: turn on is for SCSI termination on

other switches: Reserve



DIP switch adjustment

Chapter 5. DupeBoy Utilities

5.1 About DupeBoy utilities

DupeBoy utilities is one set of powerful CD recording softwares which is developed by **ACARD Technology Corp**. It provides very easy and friendly interface for operation, with DupeBoy utilities, users could get most benefits on CD duplication!

DupeBoy utilities includes two programs, "***DupeBoy Disc Copier***" which is for data backup and CD duplication. And "***DupeBoy Audio Copier***", which is for editing your own Audio-CD. That is, you can take your favorite songs from several CD, and write them to one disc. ***And please note, Copy Smart is just designed to assist you in reproducing CD in which you own the copyright or have legal permission to copy.***

5.1.1 Hardware requirement for DupeBoy utilities

1. Pentium-100 (Pentium-200 recommended)
2. RAM: 16MB (32MB recommended)
3. Free space 1.2GB on hard drive
4. ARS2020 Copy Smart with IDE CD-ROM and IDE CD-R/RW drive

5.1.2 System requirement for DupeBoy utilities

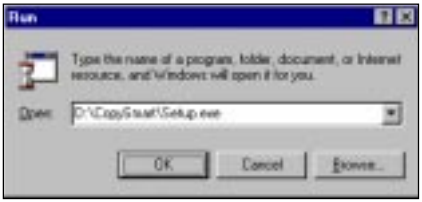
1. Windows 95/98/2000, Windows NT 4
2. DupeBoy utilities provides 3 language versions..
   There are **English**, **Traditional Chinese**, and **Japanese** version.

5.2 Installation of DupeBoy utilities

Step1: Place Copy Smart utilities CD to your CD-ROM drive

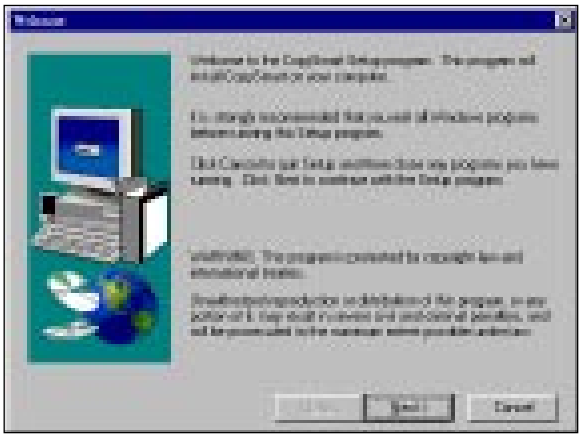
Step 2: Choose "START", then "RUN" on your Windows environment.

Step 3: Input "**D:\CopySmart\Setup.exe**" for open dialog. (CD drive is D:)

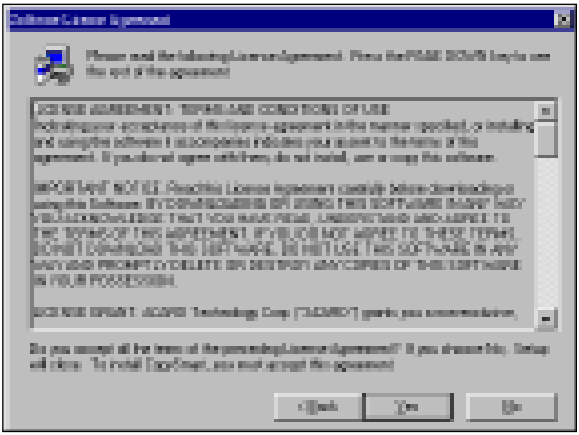


Step 4: Preparing for installation,...

Step 5: "**Welcome to the Copy Smart Setup program**", Click "**Next**" to continue.

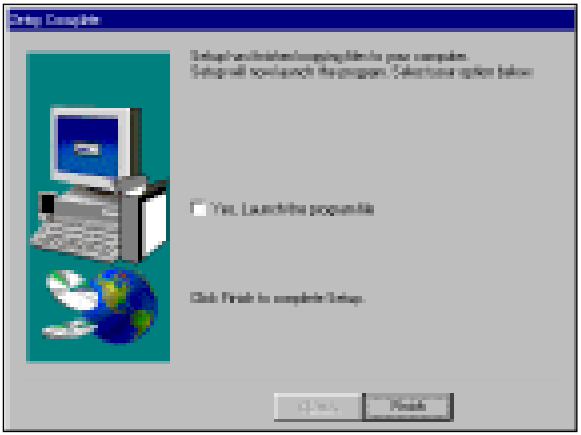


Step 6: "**Software License Agreement**", Click "**Yes**" to continue.

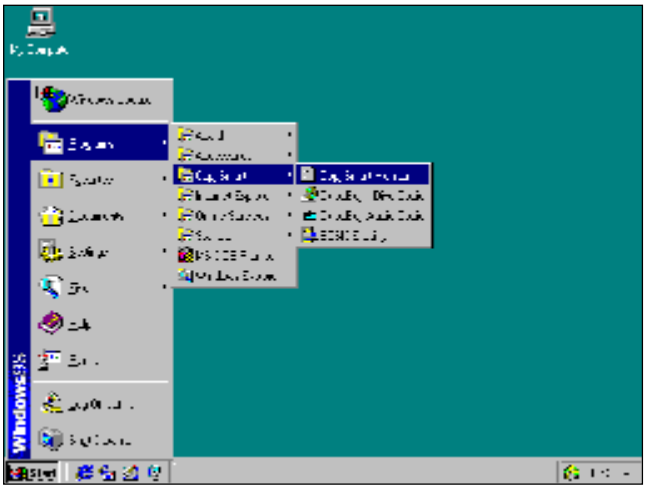


Step 7: Choose destination location for Copy Smart, then Click "**Next**" to continue.

Step 8: Setup complete, then Click "**Finish**" to close Setup program.



Step 9: Finished setup process, you can launch the DupeBoy utilities.



5.3 CD duplication with DupeBoy Disc Copier

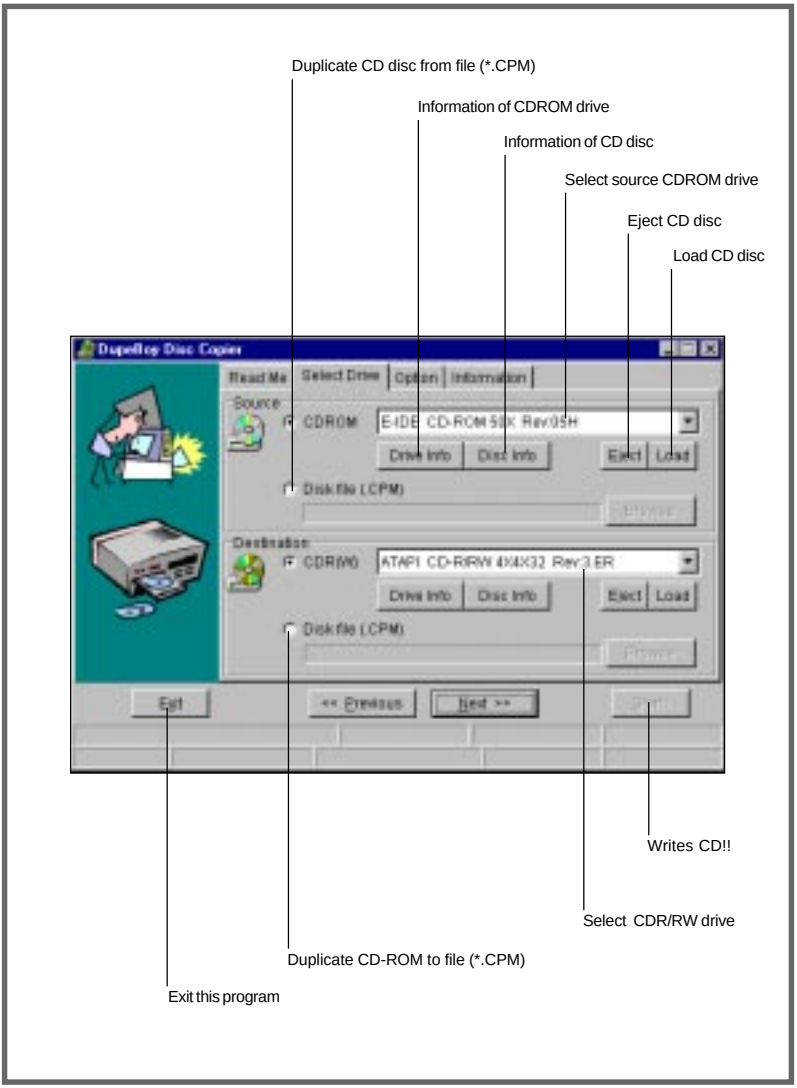
*5.3.1 Launch **DupeBoy Disc Copier***

Launch *DupeBoy Disc Copier,* you'll find more informations about DupeBoy on the screen. Click "**Next**" to continue.

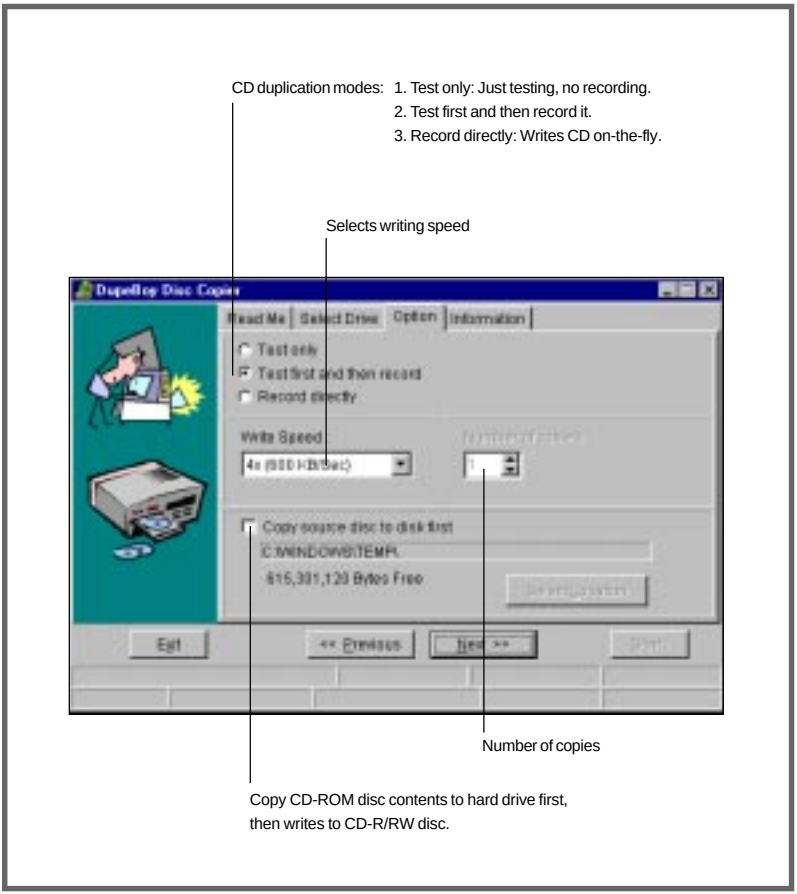
DupeBoy Disc Copier
Read Me
Select Drive
Option
Information
Welcome to use this program for your CDR(CDRW) product
The steps later will lead you to duplicate CDROM Disc to another.
1) Select the CDROM drive which has source disc in it.
2) Select the CDR(W) drive you want to record
3) Press [Drive Info] button to query CDROM or CDR(W) drivers capabil
4) Press [Disc Info] button to query source disc contents
5) If the destination disc is a Re-Writable disc, you can press [Erase Di
6) Press [Next] button to proceed to next step
7) Select [Test only] mode for testing copy only, this will not really write
About
Exit
Next >>

*If this error occurs, it means that **DupeBoy Disc Copier** can not find out CD-R/RW drive. Please quit this program, and shutdown your system, Check connection of your CD-R/RW drive.*

*5.3.2 Learning functions of **DupeBoy Disc Copier***



Function descriptions of “Select Drive” in DupeBoy Disc Copier



Function descriptions of "Option" in DupeBoy Disc Copier

*5.3.3 Duplicates CD with **DupeBoy Disc Copier** step-by-step*

Step1: Select CD-ROM drive for source drive, and select CD-R/RW drive for destination drive in **"Select Drive"** tag.

Step2: Select witing mode in **"Option"** tag.

Step3: Select writing speed in **"Option"** tag.(It depends on max. writing speed of your CD-R/RW drive and on your CD-R/RW disc condition)

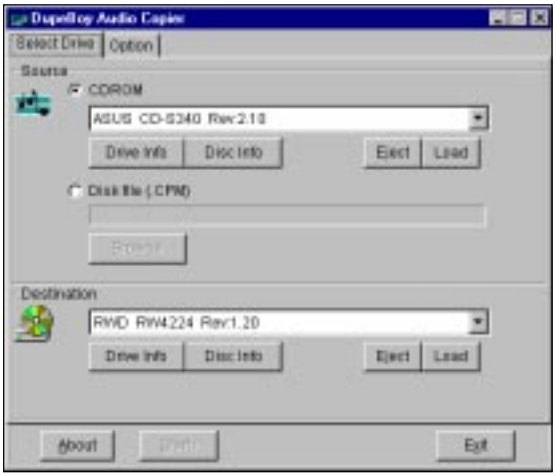
Step4: Select **"Copy source disc to disk first"** in **"Option"** tag while you need your hard disk as buffer, then click **"Next"** to continue.

Step5: Click **"Start"** in **"information"** tag to duplicate.

5.4 Makes Audio CD with DupeBoy Audio Copier

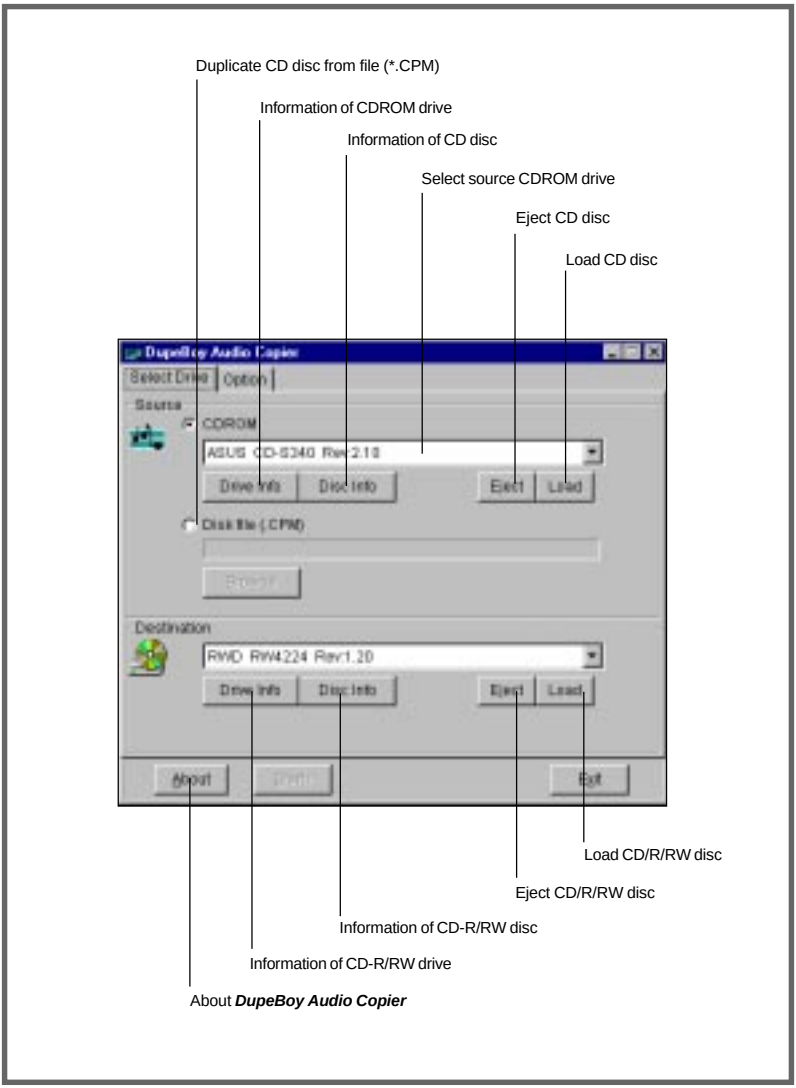
*5.4.1 Launch **DupeBoy Audio Copier***

Launch *DupeBoy Disc Copier, the screen shown below will appear in your desktop*. You can use ***DupeBoy Audio Copier*** to write just one song or selected songs from Audio CD to your CD-R/RW disc, you don't need to write all contents of Audio CD to your CD-R/RW disc.

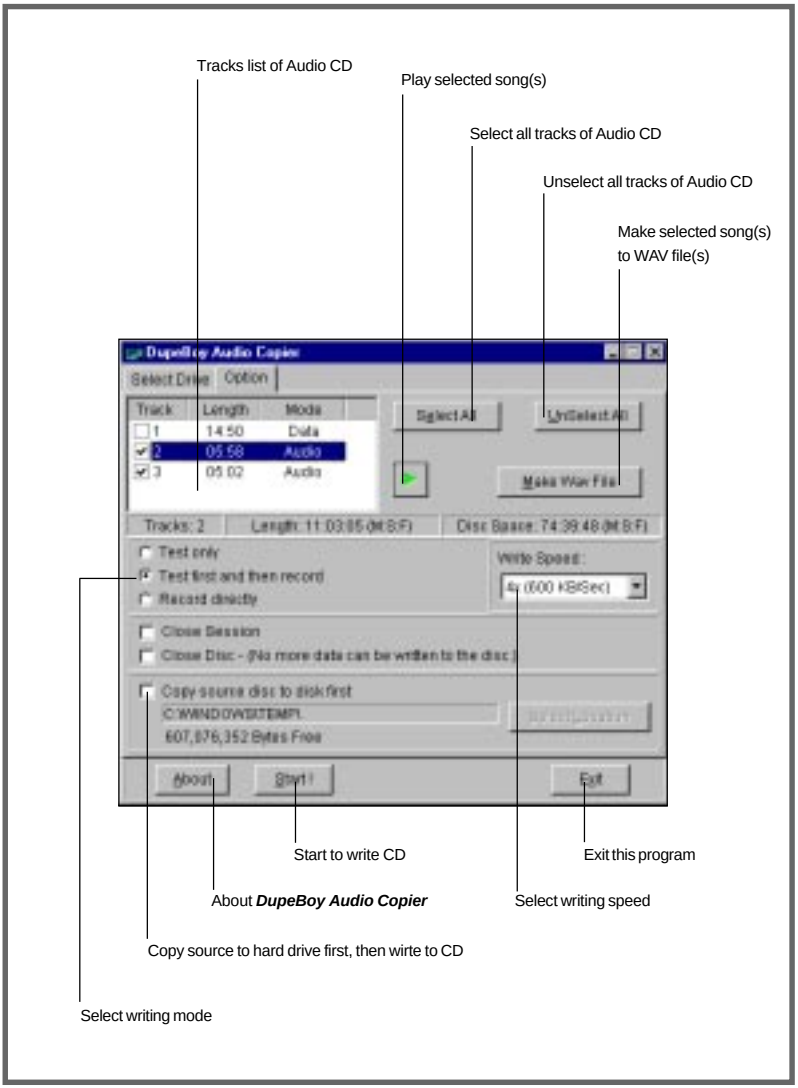


*If this error occurs, it means that **DupeBoy Audio Copier** can not find out CD-R/RW drive. Please quit this program, and shutdown your system, Check connection of your CD-R/RW drive.*

*5.4.2 Learning functions of **DupeBoy Audio Copier***



Function descriptions of "Select Drive" in DupeBoy Audio Copier



Function descriptions of "Option" in DupeBoy Audio Copier

*5.4.3 Make your own Audio CD with **DupeBoy Audio Copier***

Step 1: Select writing mode:

a. **Test only** - Just testing, no recording.

b. **Test first and then record** - Testing, if it passed, then wirtes.

c. **Record directly** - Just recording.

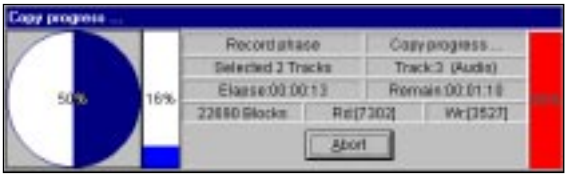
Step 2: Select writing speed:

It depends on max. writing speed of your CD-R/RW drive and on your CD-R/RW disc condition. If you choose writing speed which is over your CD-R/RW drive ability, or over your CD-R/RW disc ability, program will ignore it and adjust to suitable speed automatically.

Step 3: Select **"Copy source disc to disk first"**

If your source Audio Cd is not in good condition, you may select this function for stable recording.

Step 4: Select **"Start"** to continue process.



Step 5: Writed sucessfully.

5.4.4 More functions of ***DupeBoy Audio Copier***

5.4.4.1 Before you make your own Audio CD, you may play selected song(s) from Audio CD source first. Just click the ***"Play"*** button on ***"Option"*** tag, that music will be played.

5.4.4.2 For some applications, you may need save song(s) to file(s). Here are steps to make WAV file(s) from selected Audio songs below:

Step1: Click ***"Make Wave File"*** on ***"Option"*** tag to make WAV file. Then Click ***"Start"*** to continue.

Step2: Enter filename of WAV file(s)

Step3: Making WAV file,...

Step4: WAV file saved successfully.

Chapter 6. Copy Smart Monitor

6.1 Copy Smart Monitor utility

Copy Smart monitor is a utility for ***Copy Smart*** operations. It is the same as ***Copy Smart*** control panel which has embeded on Cabinet. This software also provides “Source” and “Destination” CD drives for your reference.

And you don’t need click “GO” and “STOP” for seconds, just click that with your mouse button, they will work.

***Copy Smart monitor* utility** provides more information than control panel on cabinet. You may find quantities of installed SCSI host adapters on your workstation, and also you may find quantities of Copy Smart machines connected to your workstation.

This example shown that your workstation has 2 SCSI host adapters, and 1 Copy Smart machine is connected. You may click the button to choose SCSI adapter or Copy Smart which you want.

This example shown that your workstation has 1 SCSI host adapter, and 2 Copy Smart machines are connected. You may click the button to choose SCSI adapter or Copy Smart which you want.

Appendix A. CD drives fully supported by CopySmart

A.1 List of IDE CD-ROM drives that supported by Copy Smart

We recommend the following IDE CD-ROM drives that can work with CopySmart properly.

AOpen 40X (CD-940E/AKU PRO)
AOpen 48X (CD-948E/AKU)
AFREEY 45X (CD-1845E/A)
AFREEY 50X (CD-2050E)
ASUS 34X (CD-S340)
ASUS 40X (CD-S400/A)
ASUS 50X (CD-S500/A)

A.2 List of IDE CD-R/RW drives that supported by Copy Smart

The following IDE CD-R/RW drives can work with CopySmart properly.

ACER CRW 6202A, ACER 4432A
AOpen CRW 9420
BTC 621E
HP 8100i
HP 8200i
JVC RW4424
PANASONIC 7582
PHILIPS PCA460RW
RICOH 7040A
RICOH 7060A
SONY CRX100E
SONY CRX120E
YAMAHA 4416E

*Please visit our web site to get the newest list. (**http://www.acard.com/**)*

Appendix B. How to avoid failure on duplication??

To avoid failure on CD duplication, you must pay attention to following suggestions.

1. Because process can not be interrupted during CD duplication, buffer is needed on CD dupe process. if "***reading speed***" is not to keep up with "***writing speed***", "Buffer underrun" will occurs, and job will be failed. To prevent that, you may:
   - ***a***. *Choose lower writing speed.*
   - ***b***. *Writes CD to image file first, then wirtes to CD-R/RW disc from this file.*
   - ***c***. *Defrag hard drives on your system before CD recording.*
   - ***d***. *Do not run another program while CD duplicating.*
   - ***e***. *Make Copy Smart ventilative, keep it cool.*

2. Clean source CD disc befrore you do CD duplication.

3. Choose nice quality CD-R/RW disc for duplication.

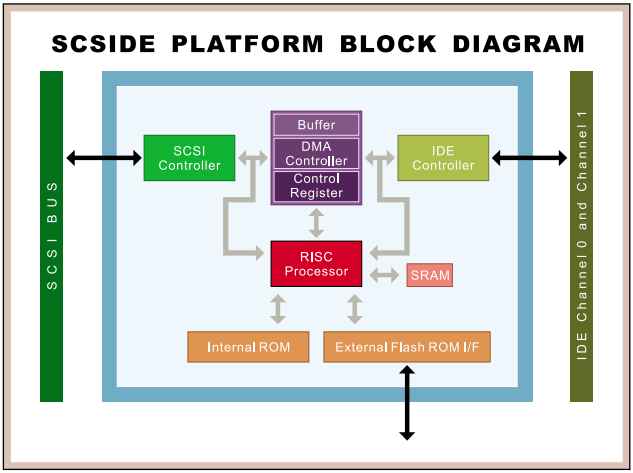
4. Keep sustained power supply, you may consider to select UPS as a power supplier.

5. Let Copy Smart takes a rest occasionally.

Appendix C. SCSIDE in brief

SCSIDE is a revolutionary invention developed by ACARD Technology Corp. It offers the unbelievable function that convert IDE data flow into SCSI bus. It will make your desktop, workstation, or even server more smarter.

Refer to the diagram below to see how ***SCSIDE*** works. No matter what type of IDE device you have, ATA hard drives or ATAPI CD drives, you could easily plug it on our ready kit to start your SCSI adventure.

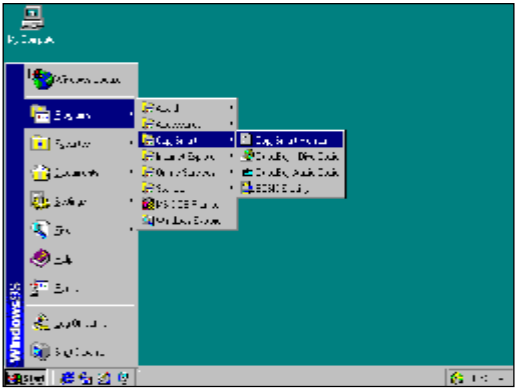


Please note, different from other devices, you don't have to install driver to active SCSIDE series of products. With simple Plug-and-Play function, you'll operate your IDE devices just like SCSI devices.

Appendix D. SCSIDE utility

ACARD Technology Corp. provides ***"SCSIDE utility"*** which has bundled with Copy Smart. User can use this utility to update, backup firmware in Copy Smart, and use this utility to emulate device models for some applications.

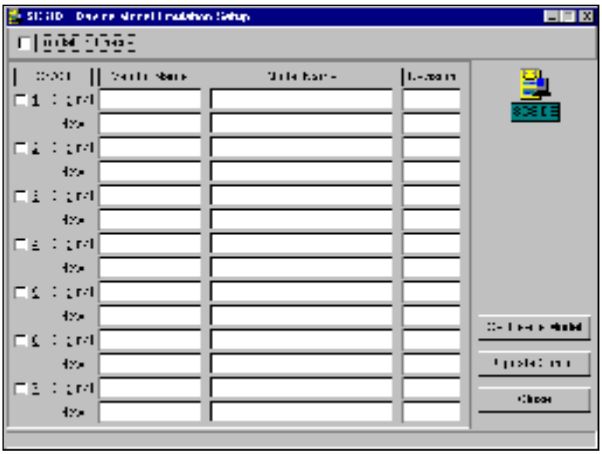
At first, launch the "SCSIDE utility" program as following shown picture.



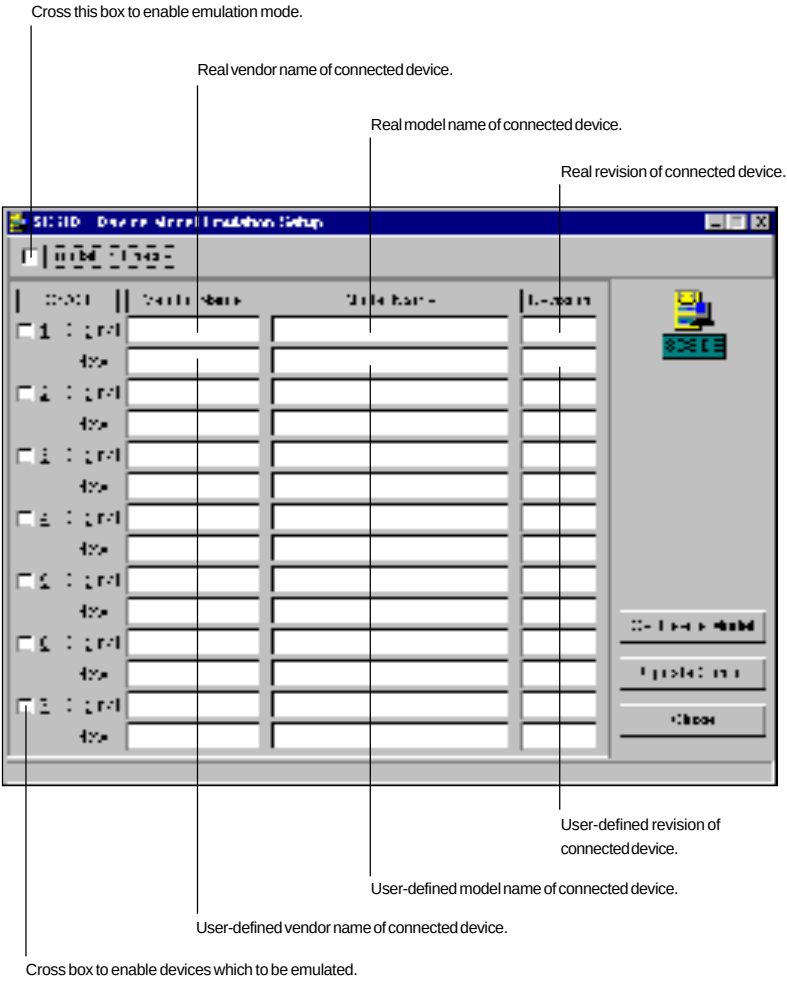
Then, the main screen of SCSIDE utility ***(SCSIDE Setup)*** *will appears. You may choose SCSI host adapter and connected device which you want on this setup screen.*

You may backup SCSIDE firmware to file, or may update newer SCSIDE firmware, just by clicking ***"Advance>>"*** *on SCSIDE Setup screen.*

Because some applications need real model name of devices, such as some CD recording programs do recognize CD-R/RW drive model, or it can not to work if it don't know the CD-R/RW device. SCSIDE utility just provides emulation program to solve this problem, you may use it to emulate connected CD-R/RW device as any model name which you like, or you need.
By clicking ***"Modify Emulation Config"*** *button on setup screen, you can do this job.*



Here are descriptions of "Emulation Setup" screen:


Cross this box to enable emulation mode.
Real vendor name of connected device.
Real model name of connected device.
Real revision of connected device.
User-defined revision of connected device.
User-defined model name of connected device.
User-defined vendor name of connected device.
Cross box to enable devices which to be emulated.

Click ***"Get Device Model"*** *to get information of connected device drive, the information will shown automatically. Just click "Update Config" button to save your configuration.*

Appendix E. Technical supports

If you have any problems in installation or operation of your CopySmart, please contact your dealer. Our dealer could help you out with most of system conflict and technical issues. If you don't have a dealer nearby to contact or if you need some other special assistance, you may use one of the ACARD Technoloy Corp support service listed below.

Online Service

You may get most of technical document from ACARD's web page (***http://www.acard.com/***), or send email to our application engineers with address of ***service@mail.acard.com***.

Fax Service

You may use your touch-tone fax machine to send your problems to ACARD fax system by just dialing the fax numbers listed below.

Location	***Phone Number***
TAIWAN	***+ 886 (2) 2738 1244***

Mailing Service

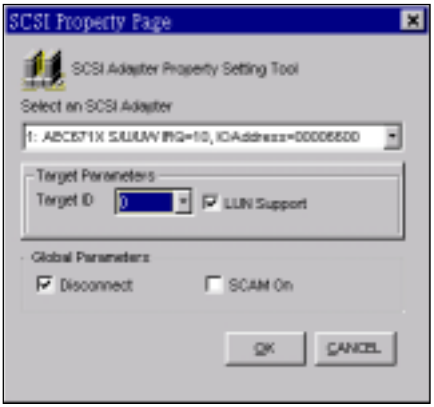
You can mail your questions or comments to the postal address below.

Field Application Engineer Dept.
ACARD Technology Corp.
36, Wuhsing St. Taipei,
110 TAIWAN, R.O.C.

Appendix F. How to enable LUN function on ACARD SCSI adapter

Here are examples for LUN function setting by ACARD SCSI adapter, one is for Windows 95/98, another is for Windows NT. Users could cross checkbox of **LUN Support** to enable LUN function.

Enable LUN support on Windows 95/98.



Enable LUN support on Windows NT

Appendix G. Benchmark of Copy Smart

	ASTAR True-50 50X IDE CD-ROM	ASTAR True-50 50X IDE CD-ROM with ARS-2020 Copy Smart	Plextor 40X SCSI CD-ROM
WinBench 98 Overall (KBytes/Sec.)	2200	2750	1920
Overall Playback (KBytes/Sec.)	2200	2750	1920
Access Time (Milliseconds)	73.9	80.7	97.1
CPU Utilization (Percent Used)	96.5	8.21	6.5
Transfer Rate/Inside (KBytes/Sec.)	3520	3940	3100
Transfer Rate/Outside (KBytes/Sec.)	3150	7630	5810